

The University of San Francisco

## USF Scholarship: a digital repository @ Gleeson Library | Geschke Center

---

Master's Theses

Theses, Dissertations, Capstones and Projects

---

Spring 5-18-2019

### Mentoring Female Entrepreneurs: Revenue Analysis

Candy M. Moreno Garcia  
cmmorenogarcia@usfca.edu

Follow this and additional works at: <https://repository.usfca.edu/thes>



Part of the [Entrepreneurial and Small Business Operations Commons](#), [Growth and Development Commons](#), and the [Other Education Commons](#)

---

#### Recommended Citation

Moreno Garcia, Candy M., "Mentoring Female Entrepreneurs: Revenue Analysis" (2019). *Master's Theses*. 1263.  
<https://repository.usfca.edu/thes/1263>

This Thesis is brought to you for free and open access by the Theses, Dissertations, Capstones and Projects at USF Scholarship: a digital repository @ Gleeson Library | Geschke Center. It has been accepted for inclusion in Master's Theses by an authorized administrator of USF Scholarship: a digital repository @ Gleeson Library | Geschke Center. For more information, please contact [repository@usfca.edu](mailto:repository@usfca.edu).

# Mentoring Female Entrepreneurs: Revenue Analysis

Candy Moreno-Garcia

Advisor: Bruce Wydick

Department of Economics  
University of San Francisco  
2130 Fulton St.  
San Francisco, CA 94117

Thesis Submission for the Master of Science Degree  
in International and Development Economics

e-mail: [cmmorenogarcia@usfca.edu](mailto:cmmorenogarcia@usfca.edu)

April 15, 2019

Abstract: Throughout the world, significantly less women own businesses than their male counterparts. In addition, they tend to own businesses that are smaller, have less growth, are less profitable and have lower sales turnover than those of men. Supporting female entrepreneurs is crucial as they tend to spend more on the health of the household, nutrition and education. This paper uses a randomized controlled trial to determine the impact of a mentorship program between experienced female entrepreneurs and inexperienced entrepreneurs, specifically focusing on the impact to profits. I use data collected from three rounds of survey over the course of six months from a sample of 107 female entrepreneurs in Medellin, Colombia. The results show that the treatment had a positive effect on profits after a month, though not significant.

## 1. Introduction

In developing countries, informal economies contribute tremendously to the Gross Domestic Product (GDP). In Central and Latin America, informal economic activity make-up about twenty-five to sixty percent of the GDP. Compared to OECD countries where informal economies are eight to thirty percent of the GDP (Tomal & Johnson 2008). Colombia like many Latin American countries has a large informal economy. Nearly half of Colombia's labor force is employed in the informal economy. Of those working in the informal economy, about fifty-five percent are self-employed. In fact, nearly all of self-employed works in the country, ninety-two percent operate informally (Tomal & Johnson 2008). Like other Latin American countries, Colombia has similar levels of self-employment and informality. In Colombia, self-employment and informality are highly correlated; only about five percent of those self-employed workers have a registered business in the Chamber of Commerce (Mondragón-Vélez & Peña-Parga 2008). In developing countries, the informal sector is overwhelmingly and disproportionately made up of female entrepreneurs (Bateman et al. 2011) (Del Mel et al., 2014) (World Bank). Consequently, by being excluded from the formal sector, those who are self-employed have little to no social security or protection (Chant & Pedwell, 2008).

In order to assist female entrepreneurs in developing countries, a large portion of the population, it is crucial to understand their struggles and challenges given they contribute not only to their household income but to the GDP of the country. Rates of female entrepreneurship are much higher in developing countries compared to developed countries (Minniti et al., 2006). Unfortunately, business owning women in LDC do not experience much success in their businesses. The percentage of female micro business owners decreases as the size of the firm increases (World Bank, 2011). Defining small firms as those employing between 5 to 10 employees, only between 18 to 31 percent of females own small firms in Latin America (World Bank, 2011). These statistics make us painfully aware of the disadvantages and inequalities women business owners in developing countries face. Women in developing countries are forced to face higher barriers of entry when attempting to enter the formal labor market and consequently seek self-employment (Minniti & Naudé, 2010). According to the World Bank, businesses owned by women are characterized by "low capital requirements, low barriers to entry, low income" (2011). We know that women in developing countries disproportionately outnumber business owning women in developing countries, however it is not because women in less developed countries have more of an entrepreneurial spirit but

rather because their circumstances give them no other option. If obtaining a job with a fair wage is not made available to her, she has no option but to create one for herself. Unlike female entrepreneurs, male entrepreneurs are more likely to have been working in the wage sector before starting their business (World Bank). It is no wonder that women seek self-employment as a means to generate income given that other options are unattainable for many women with limited resources. This stems from the lack of alternatives and limited opportunities in developing countries. Necessity is a driving force for many in developing countries to seek self-employment as a means to sustain themselves and their families. It is also through self-employment that economic empowerment of a woman is achieved (Del Mel et al., 2014).

Moreover, certain experiences are exclusive to women as they are “tainted by patriarchal norms” (Marlow, 1997). These experiences include if one of the motivations to start her own business is due to the feeling of not having upward mobility in career because of her gender. Additionally, if her ambitions have been molded by gendered experience, or if she is resorting to self-employment as a means to a fair wage (Marlow, 1997). When women have their basic rights violated, they are less likely to have the ambition to expand their business as a result of gender-based discrimination (Estrin & Mickiewicz, 2011). Women often encounter disadvantages that stunt the growth of their business such as gender ideologies, strict social constraints, lack of capital and time (World Bank). While motivations, limitations and glass-ceilings may vary across individual women due to specific country context, cultures, social and personal values; the literature indicates that across the board, female entrepreneurship in developing countries is growing and they are faced with disadvantages that are exclusive to their gender. Although social norms put limitations and cause impediments to career growth, their home lives are many times much more progressive. In the last four decades there has been a significant increasing in the number of female headed-household in Latin America (Liu et al., 2017). They spend their income on household needs such health, nutrition, and education. Female micro-entrepreneurs compared to male micro-entrepreneurs-when head of the household, have a more significant impact on their household’s overall welfare and consumption (Nichter & Goldmark, 2009).

The international community understands the necessity and importance to support entrepreneurship in developing countries. Recently, there has been an increase interest in supporting entrepreneurs and specifically female entrepreneurs in developing countries due to their rapid increase as a means for economic development (Kevane & Wydick, 2001)

(Mondragón-Vélez & Peña-Parga, 2008). Researchers are strongly advocating for the support and expansion of female entrepreneurship in developing countries as a means to empower women and reduce poverty (Minniti & Naudé, 2010). International organizations, governments and NGOs are spending billions on interventions such as micro-financing programs and formal business education training which have been two popular interventions. However, studies have found that micro-financing and classes have minimal to no effect on business profits.

Microfinancing aims to provide financial services to low-income households that have been traditionally excluded from the formal banking sector due to the lack of collateral or limited resources (Morduch, 1999). These loans became hugely popular as a means for reducing poverty in developing countries. The goal of microfinancing is to render loans with repayment conditions that are reasonable and just (Mokhtar et al., 2012). Having access to credit could serve as an instrument for micro-entrepreneurs who see a business opportunity but lack the capital to implement their business plan or expand their already established business. Microfinance programs proved what many believed was impossible, that low-income households, some with no collateral, were not only capable of repaying their loans but had high levels of repayment rates (Morduch, 1999). Female-owned enterprises in particular report that the lack of access to credit as a main constraint and on average have less access to basic banking services (The World Bank). Eighty-one percent of the poorest microfinance borrowers are women (Daley-Harris, 2007). Researchers have analyzed the impact of microlending, whether it has met its intended purpose of alleviating poverty constraints or not. What was once believed to be the silver bullet to eradicating poverty now has critics arguing that micro-financing has failed to live up to its expectations. Most microlenders focus on servicing microentrepreneurs, therefore, treatment effects on entrepreneurship can be examined. The lack of evidence on the increase in profitability can lead to the conclusion that microcredit is failing on its promise, perhaps simply reducing credit constraints is not enough to reduce poverty (Banerjee et al., 2015) (Banerjee et al., 2013). Microfinancing has allowed women to improve their welfare and consumption, but this may not be enough for “growth-oriented women entrepreneurs” (World Bank-IFC International Finance Corporation, 2011).

The other popular approach to combating the challenges faced by small business owners in developing countries has been formal business education training. The theory behind this approach is that formal business classes will give poor business owners the skills they lack to grow and improve their business. However, when business owners adapt some of the teachings,

only modest improvements are made (De Mel et al., 2014). Blattman and Ralston analyzed the impact of International Labor Organization's Start-and-Improve Your Business (SIYB), a business-training program widely used in developing countries and found no evidence that the program had any positive effect on profits or sales (Blattman & Ralston, 2015). A randomized experiment in Sri Lanka also measured the impact of the SIYB program among female business owners earning less than \$2 a day. The results found that there was no increase in the number of hours allocated to their business after the training. The study also concluded that the business training course led to modest changes in business practices such as marketing, stock control, financial planning and bookkeeping, however no impacts on profits or sales were found (De Mel et al., 2014). Similarly, a field experiment conducted in Tanzania among female and male entrepreneur's microfinance borrowers who owned a business, found that formal business training lead to changes in business practices for both men and women. Profits increased among male owned businesses, however, no effect on profits were detected for female owned businesses (Berge et al., 2011).

Unlike formal business training courses that require a structure, a curriculum, and class-like-settings; mentoring allows for flexibility and counseling can easily be adapted to target the specific needs of the mentee (Cho & Honorati, 2014). In 2017, Brooks et al., conducted a randomized controlled trial in Kenya and found that a mentoring program between experienced and inexperienced female micro-entrepreneurs had an impact of 20% increase in profits for mentees. The researchers pointed to the experienced mentor's better understanding of local markets and practical advice as a key explanation. Though this is a new and exciting study, the role of mentorship on business owners has been analyzed in the past. A study done in 1979, argued that mentorship increases work effectiveness. The study found that about two-thirds of the observed distinguished American executives all had mentors. These executives earned more money at a younger age and reported being happier in their careers compared to their counterparts who did not have mentors (Roche, 1979). Another study looked at the impact of e-mentoring, the process in which a mentor guides a mentee through online interactions and found that despite the lack of face to face interactions, mentees increased their business knowledge and skills. In addition, researchers found that the intervention positively influences mentees attitudes towards facing uncertainty, flexibility, and innovation (Kyrgidou & Petridou, 2013). Mentoring allows for the mentor to focus on the issues and specific necessities of the mentee. However, according to Brush and Cooper, access to a mentor and

other resources such as networks and markets can be difficult for a female entrepreneur to acquire (2012). Our study seeks to replicate the mentorship experiment done in Kenya by Brooks et al., as closely and as feasible as possible, to examine whether their findings have external validity in Medellin, Colombia.

### *1.2 Mentorship Theory*

Social exchange theory is a series of interactions that lead to obligations which are seen as “interdependent and contingent on the actions of another person” (Emerson, 1976). This theory states that these interdependent transactions have the possibility to generate high-quality relationships. Three main ideas constitute social exchange theory: 1) rules and norms of exchange, 2) resources exchanged, and 3) relationships that emerge (Cropanzano & Mitchell, 2005). Rules and norms of exchange is established primarily through reciprocities. In social psychology, this idea of reciprocity comes from responding to a positive action with an equal positive action. Resources exchanged encompasses six categories; information, love, status, money, goods and services which lead to economic and socioemotional outcomes. These categories represent an economic value that is exchanged but may also have symbolic value beyond material properties. Economic outcomes are typically tangible while socioemotional outcomes refer to a person's social and self-esteem needs (Cropanzano & Mitchell, 2005). According to Shore et al., social-emotional outcomes let a person know they are valued, important and are treated with dignity (2001). Lastly, the relationships that emerge can be broken up into four categories, 1) pure economic exchange, 2) mutual investment, 3) underinvestment and 4) overinvestment.

According to Zeitlin & Homans, social exchange theory is based on the concept that people develop, keep and leave relationships in accordance with their perceived costs and benefits (1975). Furthermore, he introduces the idea that exchanges between individuals are not limited to material possessions. For example, reciprocities come to play when the person who is benefitting feels obligated to reciprocate as a way to keep the social exchange balanced (Emerson, 1981). Kram states that in a mentoring relationship; emotional support, information, services, status all are part of the social exchange resource which is part of the resources exchanged (1985).

Perceived Organizational Support (POS) Theory is a narrower sub-section of social exchange theory specifically applied towards mentorship (Baranik, et al. 2010). According to Baranik et al., the theory of perceived organizational support has different requirements for it

to occur. The first is that there must be a perception of trust between the mentor and mentee; trust here being the symbolic social exchange occurring. Additionally, protection and supportive challenging are ways in which symbolic social exchanges between mentor and mentees foster development (Baranik, et al. 2010). Perceived organizational support theory also highlights the importance of organizational agents, who convey information to mentees (Baranik, et al. 2010). However, the limitation of this theory and social exchange theory in general is the causal mechanisms in which they take place.

It seems the majority of the empirical research related to this is focused on correlation. My randomized controlled trial in Medellin, Colombia at its foundation relies on the exchange of non-material values like the ones mentioned in the social exchange theory. In particular, the idea of reciprocity and altruism play a role since mentors are not substantially rewarded. Furthermore, participation, exchanging knowledge, and support are optional.

In order to try to explain how mentorship might affect a range of outcomes including economic ones, we must first understand what it is about mentors that affect change; for this we turn to motivational theory. Morgenroth et al. argue that mentors serve as motivational role models and introduces 3 different roles mentors or role models play in influencing motivation and goal development; 1) acting as behavioral models, 2) representing the possible, 3) and being inspirational (2015). Their theoretical framework introduces three new constructs that can be useful in understanding when role modeling is effective: 1) goal embodiments, 2) attainability and 3) desirability. In contrast to traditional definition of role model, they describe a role model as someone who represents future possibilities or what could be achievable. It is believed that role modeling is the most powerful when role models reinforce existing goals and encourage the adoption of new ones (Morgenroth et al., 2015).

## 2. Experimental Design & Data

### 2.1 *Design*

Our study launched a 6-month mentorship program in Medellin, Colombia to analyze the effect of mentorship among female entrepreneurs on revenue. Through a partnership with Fundación Manos con Esperanza; a faith-based nonprofit organization aiding low income micro-entrepreneurs in Medellin, the municipality of Itagui; a suburb of Medellin, and Banco de los Pobres; an IMF serving micro-entrepreneurs in Medellin. These organizations reached out to their network of female micro-entrepreneurs and extend an invitation to participate in our



study. We then met with the women interested in the study and who met the participation criteria (both mentors and mentees) and further pitched the project and answered any related questions. Baseline data was collected at these initial gatherings for both groups. Using baseline information from those who qualified as mentees, we randomized treatment and created a treatment and control group. Both groups were then contacted and made aware of the selection, additionally, those selected to receive a mentor were put in contact with their new mentor. The mentorship program consisted of 5 weekly meetings followed by 5 monthly meetings for the duration of 6 months and a total of 10 meetings. Surveys were conducted in three rounds; at baseline, one month and then six months after the program commencement. Mentors were provided with a curriculum developed by the Professor of Economics at the University of San Francisco, Bruce Wydick in which various business topics were covered for each week, however, it was up to the mentor's discretion how strictly she wanted to follow it. Mentors were encouraged to discuss whatever topics they deemed most pertinent and important.

## *2.2 Sampling Method and Treatment*

Our mentee sample was restricted by qualifications. We used Colombia's socio-economic stratification system used in urban populations like Medellin to categorize populations into strata's ranging from 1 through 6; 1 being the lowest and 6 the highest income area. A woman had to be of a maximum socio-economic stratification system of 3 or lower and have less than 5 years of experience in her current business. As previously mentioned, we generated our sample using a baseline survey. Mentees were sampled from the Municipality of Itagui; we selected 52 participants who met the requirements. From Banco de los Pobres, 55 eligible participants were selected. Our mentee sample size was of 107. Half of the mentee sample size was randomly assigned to treatment and the other half to control. Using baseline data, we used covariate matching to create the two groups in order to create the best counterfactual for each individual. We first grouped participants by geographical location, then by business type, followed by years of experience in their current business. This process created pairs with similar covariates. One of the pairs would be placed in "group A" and the other in "group B" and a coin toss would determine which group, A or B, would receive treatment, thus randomizing our sample. This process was done with each of the six survey locations. Survey locations were selected for participants based on the location nearest to their home.

Qualifications to be a mentor were also assigned. A mentor had to have a legitimate and registered business with the chamber of commerce, have more than 5 years of experience and be of a minimum socio-economic stratification system of 3 or higher. Our mentors were selected from a combination of Banco de los Pobres and the Municipality of Itagui. A total of 8 mentors came from Banco de los Pobres, while the remainder 10 came from the Municipality of Itagui. Mentors and mentees were matched based on location and business type. Each mentor was assigned to a group of about 3 mentees. A mentor from Banco de los Pobres mentored mentees from Banco de los Pobres while the same rule applied mentors and mentees selected from Itagui. This was solely done as an effort to minimize travel cost and time, making reunions with a mentor as convenient as possible. We sought to incentive participation from the mentees by providing information on the benefits of mentorship and additionally with monetary compensation for their transportation to and from their meeting location. Mentors were modestly compensated monetarily for their service and honored with recognition ceremony dinner at the conclusion of the study for their participation and contribution. The stipend compensations were as follows: \$5,000 COP for mentee transportation for each meeting attended, \$10,000 COP for completing the second wave survey, and \$15,000 COP for completing the third wave survey, \$120,000 for mentor's participation and transportation expenses.

### *2.3 Hypothesis*

The null hypothesis is that there will be no impact of the mentorship on profits.

$$H_0: \beta = 0$$

The alternative hypothesis is that the mentorship will increase the profits of female micro-entrepreneurs.

$$H_0: \beta \neq 0$$

I hypothesis that as the mentors and mentees formula a relationship, valuable information will be passed down from the mentor to their mentees. Mentees will be exposed to local knowledge and new networks, thereby inducing mentees to apply their newly acquired knowledge to more cost-effective business practices leading to an increase in profits.

### *2.4 Regression Specification*

My ANCOVA regression model is the following:

$$y_{it} = \alpha + \rho \times y_{i0} + \beta \times Treatment_i + \delta_t + X_i' \theta + \epsilon_{it}$$

where

- ▶  $i$ =Individual,  $t$ =Wave
- ▶  $y_{it}$ = log of revenue (1+log) at wave  $t$ , with  $t=0$  the baseline period
- ▶  $X'_i$ = Age, experience, education, economic stratification baseline  $y$  and pair fixed effect
- ▶  $\delta_t$ = Wave fixed effect

Given that I am using data from the same individuals across three different time periods, two of those being post intervention, I will be using a panel data approach to analyze the impact of the mentorship program on profits. I am analyzing these effects on a balanced panel dataset. The main results I am reporting are the effects the program had during the duration of the study, in its totality after the one-month follow-up and the six-month follow-up. I also look at the impact the mentorship program had on each wave; immediate effects after the one-month follow-up, and the longer effects after six months. An ANCOVA model is ideal for this study as it is useful when calculating the treatment effect on an outcome. The model allows me to see the average change over time in the outcome variable for both the treatment and the control group and is more precise and conservative than a difference-in-differences model. Not all participants chose to answer all three surveys, so I will be doing my analysis using data from those who answered all three surveys, those who answered the baseline and the second wave, and lastly those who answered baseline and the third wave thus using a balanced panel. The dependent variable is log revenue, which I denote as  $y_{it}$ . My parameter of interest  $\beta$ , is my treatment variable which indicates assignment to treatment, I also include several controls that could influence the outcome such as age, education, strata, years of experience, an interaction term between treatment and wave two and another interaction between treatment and wave three, conditional on having data for all three periods. I run the same regression to see exclusively the one-month effects as well as only six-month effects, each separately rather than their combined effect. In all three regressions I add a time fixed effect to control for any changes over time that could potentially affect the dependent variable. I clustered my standard errors at the individual level, which accounts for correlation of the errors of an individual over time. This is the same level at which the treatment was administered. Moreover, to verify the accuracy of my coefficients I run those same regressions with additional fixed effects, adding a mentor group level fixed effect in addition to the time fixed effect and an individual fixed effect in addition to the time fixed effect. After running these regressions, I find that the coefficients remain consistent with the additional fixed effects.

As previously mentioned, I assisted in setting up this randomized controlled trial and was in the field every step of the way. This allowed me to have a better understanding of the data. It led me to suspect that the treatment effects were influenced by the quality of the mentor. I conducted an analysis based on an interaction term between treatment and mentor quality. Mentor quality is a ranking based on several characteristics such as mentor's revenue, years of experience, number of employees, years of education. The higher the quality, the higher the ranking. When I include the interaction term for mentor ranking, the interaction is between treatment and mentor ranking. Those in treatment were assigned a 1, while those in control were assigned a 0. The ranking for treatment is a number between 1 and infinity while the value for control would be 0. Therefore, including the mentor ranking as a control is unnecessary as it would have the same value as the interaction.

### 3. Results

My summary statistics indicate that women in the control and treatment group are on average the same age of around 40 years old. Women in both groups on average belong to the same socio-economic stratification system of 2. About 50% of our sample came from Banco de los Pobres while the other half came from the Municipality of Itagui. The summary statistics informs that both control and treatment are balanced and similar in observable characteristics. Currently, treatment and control on average have about 1 loan they still owe. The control group on average work about 5 days a week while the treatment group on average, work slightly under 5 days a week. The control group also outworks the treatment group in terms of hours they dedicate to their business a day. The control group also work longer hours compared to the treatment group, though neither are statistically different. About 48 percent of women in the control group keep accounting records while almost 57 percent of women in the treatment do. Almost half of women in the control group reported finding it difficult at times to have enough to eat while that percent is slightly higher for treatment at about fifty-six percent. After conducting a balance check using a t-test, both groups were comparatively similar, this is expected as our sample was randomized. (Please see appendix A for balance table).

The results from my first regression looking at the impact of the mentorship program over the duration of the study, I find that treatment had a negative effect on revenue. For every unit change in x, a percentage change in y. These results are similar in the second and third regression—the one-month and six-month impacts. None of the coefficients are significant and

both have large standard errors. The difference between the two is that the point estimator in columns 2 and 4 are positive after 6 months. However, the difference is small compared to the size of the standard errors.

In my main regression, the first column is my simple model that includes my treatment and wave fixed effects. The second column includes a dummy variable for participants who came from Banco de los Pobres. The reason being that on average women from Banco de los Pobres were worse off financially than women from Itagui. The third column in addition to the wave fixed effect is also includes a pair fixed effect. The pair fixed effect is observing average differences within a pair. I want to account for any time invariant characteristics of a pair at the level at which randomized treatment. The identifying variation comes from assignment to treatment which is at the pair level. This specific fixed effect is comparing outcomes within a pair. The fourth column includes my controls without the pair fixed effect and the last column also includes my controls without the pair fixed effect. Similar results are found in across all three tables. (Please see appendix B through D for visual).

I then ran my main regression, this time interacting the mentors overall ranking and the revenue ranking. When controlling for these rankings, treatment had a positive effect. I controlled for the absolute distance between a mentor and mentee in revenue and again, I find a positive effect. (Please see appendix E and F for visual).

Unfortunately, this study suffered from a high attrition rate. Our sample started with 107 participants at baseline, this number dropped to 82 in the second wave and dropped further in the third wave leaving the final count at 71. Due to the high number of individuals that dropped from the program, the majority for unknown reasons, I hypothesis that those in the study who chose to leave, were individuals who lost interest in the study because they did not find it useful for them. I checked this hypothesis by running a regression on profits and those who dropped at any point in the study, both in treatment and control and found that there was a positive coefficient of about 92%, which was almost significant at the 10% level.

#### 4. Conclusion

This study implemented a randomized controlled trial to determine the impact of a mentorship program between experienced female entrepreneurs and inexperienced micro-entrepreneurs, specifically focusing on the impact on revenue. I use data collected from three rounds of survey from a sample of 107 female entrepreneurs in Medellin, Colombia. The data I

used was primary data, collected at baseline, one month into the program and at the six-month conclusion. The data was set to a balanced panel and an ANCOVA model was used to analyze the impact of the intervention. The results indicated that the treatment had a negative effect on my variable of interest—revenue though was insignificant. However, I believe there were still individuals who benefited in other aspects from the mentorship due to the feedback received in the field. An advantage of having been in the field conducting and organizing this project, gave me a unique inside on every aspect of this project. On countless occasions, I spoke with women who thanked my team and I for introducing them to their mentor, who expressed their gratitude and appreciation for the program and shared with us what they had learned since starting the program. They shared pictures of their meetings with their mentors and their peers, even when unsolicited. It was evident that the program had been a source of motivation, happiness, and comradery for many. Fewer were the women who expressed their lack of interest in their program and unmotivated in what the mentor had to offer them. This is not surprising as it is understandable that not every person would fully enjoy and benefit from the program.

Our sample size was relatively small to begin with, making observing a causal relationship between treatment and profits extremely difficult. We also had limited resources to work with and therefore had to budget very carefully and limit our spending even in situations when we had issues that money could have potentially solved. The mentorship program in Medellin, Colombia among female entrepreneurs did not have an effect on revenue. Unfortunately, these results contradict those of Brooks et al., the study we were attempting to replicate as closely as possible. This could be due to a number of reasons, one being that it is not externally valid in this context or perhaps the small sample size did not allow the detection of a statistically significant effect. I found that it is important to have a mentor and mentee be more closely related so that the knowledge and information passed down is applicable to the mentee. I recommend that for future studies like this one, more attention be paid on the selection of the mentor. A mentor with an impressive resume is not always the one who will make for a good mentor.

## Appendix A

	Control	Treatment	P-Value
Age	39.418	40.635	0.577
Experience	5.436	5.83	0.759
Business Age	2.059	2.207	0.607
Strata	2.145	2.058	0.535
Education	10.982	10.837	0.821
lprofits	11.572	11.597	0.938
Meal Difficulties	0.545	0.558	0.924
Loan	0.782	0.731	0.543
Work Days	5	4.941	0.888
Work Hours	8.815	8.25	0.363
Accounting	0.481	0.569	0.376
Meals	3.382	3.25	0.402
Number of Loans	1.163	1	0.193

## Appendix B

Results for log of Revenue (log(1+x))

VARIABLES	(1)	(2)	(3)	(4)	(5)
	Revenue	Revenue	Revenue	Revenue	Revenue
Treatment	-0.108 (0.525)	-0.123 (0.516)	-0.236 (0.564)	-0.076 (0.569)	-0.552 (0.622)
Baseline Revenue	0.369 (0.284)	0.361 (0.258)	0.387 (0.251)	0.390 (0.256)	0.529** (0.228)
Age				0.000 (0.020)	-0.016 (0.037)
Education				0.049 (0.105)	0.288 (0.188)
Experience				0.056 (0.047)	0.211** (0.090)
Strata				0.683 (0.511)	1.229 (0.830)
Banco		1.347** (0.532)		2.116** (1.016)	
Constant	7.601** (3.563)	7.038** (3.245)	7.443** (3.084)	3.962 (3.878)	-0.420 (4.394)
Pair FE	No	No	Yes	No	Yes
Wave FE	Yes	Yes	Yes	Yes	Yes
Observations	153	153	150	145	142
R-squared	0.095	0.146	0.469	0.174	0.561

Robust standard errors in parentheses, clustered at the individual level

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## Appendix C

Results for log of Revenue Post 1 Month

VARIABLES	(1) Revenue	(2) Revenue	(3) Revenue	(4) Revenue	(5) Revenue
Treatment	-0.178 (0.668)	-0.265 (0.659)	-0.339 (0.946)	-0.102 (0.666)	-0.493 (0.929)
Baseline Revenue	0.278 (0.280)	0.263 (0.256)	0.297 (0.319)	0.326 (0.251)	0.489 (0.306)
Age				-0.008 (0.022)	-0.033 (0.056)
Education				0.066 (0.109)	0.244 (0.251)
Experience				0.087* (0.049)	0.267 (0.162)
Stata				0.781 (0.734)	1.188 (1.403)
Banco		1.543** (0.665)		2.349* (1.182)	
Constant	8.533** (3.491)	8.008** (3.215)	8.329** (3.960)	4.230 (4.198)	0.749 (6.193)
Pair FE	No	No	Yes	No	Yes
Wave FE	Yes	Yes	Yes	Yes	Yes
Observations	82	82	70	81	70
R-squared	0.045	0.104	0.439	0.150	0.550

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## Appendix D

Results for log of Revenue Post 6 Months

VARIABLES	(1) Revenue	(2) Revenue	(3) Revenue	(4) Revenue	(5) Revenue
Treatment	-0.020 (0.600)	0.028 (0.592)	-0.439 (0.584)	0.055 (0.777)	-1.265 (1.080)
Baseline Revenue	0.469 (0.304)	0.469 (0.281)	0.446 (0.313)	0.470 (0.296)	0.481* (0.252)
Age				0.012 (0.024)	0.023 (0.049)
Education				0.019 (0.138)	0.459 (0.281)
Experience				0.001 (0.068)	0.098 (0.127)
Strata				0.549 (0.515)	0.956 (1.006)
Banco		1.151* (0.580)		1.853 (1.123)	
Constant	6.578* (3.909)	5.993 (3.639)	7.223* (3.809)	3.720 (4.147)	-1.354 (5.640)
Pair FE	No	No	Yes	No	Yes
Wave FE	Yes	Yes	Yes	Yes	Yes
Observations	71	71	56	64	47
R-squared	0.175	0.220	0.609	0.233	0.725

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1



## Appendix E

ANCOVA Mentor Ranking Interactions				
	Revenue	Revenue	Revenue	Revenue
Treatment	1.213*	1.001	0.900	0.444
	(0.693)	(0.753)	(0.565)	(0.584)
Rank Revenue	-0.170	-0.134		
	(0.116)	(0.128)		
Total Rank			-0.126	-0.062
			(0.083)	(0.089)
Baseline	0.328	0.359	0.331	0.373
	(0.265)	(0.251)	(0.265)	(0.250)
Controls	No	Yes	No	Yes
Constant	8.113**	4.574	8.069**	4.297
	(3.336)	(3.583)	(3.332)	(3.710)
Wave FE	Yes	Yes	Yes	Yes
Observations	149	141	149	141
R-squared	0.139	0.192	0.117	0.175

Robust standard errors in parentheses, clustered at the individual level

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## Appendix F

ANCOVA Absolute Distance		
VARIABLES	Revenue	Revenue
treatment	0.780*	0.795
	(0.455)	(0.488)
Tr x Dist in revenues In millions of pesos	-0.201*	-0.193
	(0.114)	(0.125)
Controls	No	Yes
Baseline	0.364	0.386*
	(0.229)	(0.223)
Constant	7.659***	4.720
	(2.895)	(3.389)
Wave FE	Yes	Yes
Observations	149	141
R-squared	0.213	0.255

Robust standard errors in parentheses, clustered at the individual level

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

#### Work Cited

- Morduch, J. (1999). The Microfinance Promise. *Journal of Economic Literature*, 37(4), 1569-1614.  
doi:10.1257/jel.37.4.1569
- Banerjee, A., Karlan, D., & Zinman, J. (2015). Six Randomized Evaluations of Microcredit: Introduction and Further Steps. *American Economic Journal: Applied Economics*, 7(1), 1-21.  
doi:10.1257/app.20140287
- Banerjee, A., Duflo, E., Glennerster, R., & Kinnan, C. (2013). The Miracle of Microfinance? Evidence from a Randomized Evaluation. doi:10.3386/w18950
- Banerjee, A., Karlan, D., & Zinman, J. (2015). Six Randomized Evaluations of Microcredit: Introduction and Further Steps. *American Economic Journal: Applied Economics*, 7(1), 1-21.  
doi:10.1257/app.20140287
- Baranik, L. E., Roling, E. A., & Eby, L. T. (2010). Why does mentoring work? The role of perceived organizational support. *Journal of Vocational Behavior*, 76(3), 366-373.  
doi:10.1016/j.jvb.2009.07.004
- Bateman, M., Ortiz, J. P., & Maclean, K. (2011). A Post-Washington Consensus Approach to Local Economic Development in Latin America? An Example from Medellin, Colombia. *SSRN Electronic Journal*. doi:10.2139/ssrn.2385197
- Berge, L. I., Bjorvatn, K., & Tungodden, B. (2011). Human and Financial Capital for Microenterprise Development: Evidence from a Field and Lab Experiment. *SSRN Electronic Journal*. doi:10.2139/ssrn.1750026
- Blattman, C., & Ralston, L. (2015). Generating Employment in Poor and Fragile States: Evidence from Labor Market and Entrepreneurship Programs. *SSRN Electronic Journal*. doi:10.2139/ssrn.2622220
- Brooks, W., Donovan, K., & Johnson, T. R. (2017). Mentors or Teachers? Microenterprise Training in Kenya. *University of Notre Dame, manuscript*.
- Brush, C. G., & Cooper, S. Y. (2012). Female entrepreneurship and economic development: An international perspective. *Entrepreneurship & Regional Development*, 24(1-2), 1-6.
- Chant, S., & Pedwell, C. (2008). *Women, Gender and the Informal Economy: An Assessment of ILO Research and Suggested Ways Forward*. Geneva: ILO.
- Cho, Y., & Honorati, M. (2014). Entrepreneurship programs in developing countries: A meta regression analysis. *Labour Economics*, 28, 110-130.
- Cropanzano, R., & Mitchell, M. S. (2005). Social Exchange Theory: An Interdisciplinary Review. *Journal of Management*, 31(6), 874-900. doi:10.1177/0149206305279602

- Del Mel, S., Mckenzie, D., & Woodruff, C. (2014). Business Training and Female Enterprise Start-up, Growth, and Dynamics: Experimental Evidence from Sri Lanka. *Journal of Development Economics*, 199-210. doi:10.1596/1813-9450-6145
- Daley-Harris, S. (2007). State of the Microcredit Summit Campaign Report 2007. Retrieved from [http://www.microcreditsummit.org/uploads/resource/document/socr\\_2007\\_eng\\_31514.pdf](http://www.microcreditsummit.org/uploads/resource/document/socr_2007_eng_31514.pdf)
- Emerson, R.,M. (1981). Social exchange theory. In Rosenberg, M, Turner R H (eds.) *Social psychology: sociological perspectives*. New York: Basic Books, 30-65.
- Emerson, R. M. (1976). Social Exchange Theory. *Annual Review of Sociology*, 2(1), 335-362. doi:10.1146/annurev.so.02.080176.002003
- Estrin, S., & Mickiewicz, T. (2011). Institutions and female entrepreneurship. *Small Business Economics*, 37(4), 397-415. doi:10.1007/s11187-011-9373-0
- Kevane, M., & Wydick, B. (2001). Microenterprise Lending to Female Entrepreneurs: Sacrificing Economic Growth for Poverty Alleviation? *World Development*, 29(7), 1225-1236. doi:10.1016/s0305-750x(01)00032-8
- Kram KE. Mentoring at work: Developmental relationships in organizational life. Scott, Foresman and Company; Glenview, IL: 1985.
- Kyrgidou, L. P., & Petridou, E. (2013). Developing women entrepreneurs knowledge, skills and attitudes through e-mentoring support. *Journal of Small Business and Enterprise Development*, 20(3), 548-566. doi:10.1108/jsbed-04-2013-0061
- Liu, C., Esteve, A., & Treviño, R. (2017). Female-Headed Households and Living Conditions in Latin America. *World Development*, 90, 311-328. doi:10.1016/j.worlddev.2016.10.008
- Marlow, S. (1997). Self-employed women — new opportunities, old challenges? *Entrepreneurship & Regional Development*, 9(3), 199-210. doi:10.1080/08985629700000011
- Minniti, M., Allen, E. and Langowitz, N. (2006) The 2005 Global Entrepreneurship Monitor Special Topic Report: Women in Entrepreneurship. Center for Women Leadership, Babson College. Babson Park, MA.
- Minniti, M., & Naudé, W. (2010). What Do We Know About The Patterns and Determinants of Female Entrepreneurship Across Countries? *The European Journal of Development Research*, 22(3), 277-293. doi:10.1057/ejdr.2010.17
- Mokhtar, S., Nartea, G., & Gan, C. (2012). Determinants of Microcredit Loans Repayment Problem Among Microfinance Borrowers in Malaysia. *International Journal of Business and Social Research*, 2(7), 33-45.
- Mondragón-Vélez, C., & Peña-Parga, X. (2008). *Business ownership and self-employment in developing economies . the colombian case*. Bogotá.

- Morduch, J. (1999). The Microfinance Promise. *Journal of Economic Literature*, 37(4), 1569-1614.  
doi:10.1257/jel.37.4.1569
- Morgenroth, T., Ryan, M. K., & Peters, K. (2015). The motivational theory of role modeling: How role models influence role aspirants' goals. *Review of General Psychology*, 19(4), 465-483.  
doi:10.1037/gpr0000059
- Nichter, S., & Goldmark, L. (2009). Small Firm Growth in Developing Countries. *World Development*, 37(9), 1453-1464. doi:10.1016/j.worlddev.2009.01.013
- Roche, G. R. (1979, January). Much Ado About Mentors. *Harvard Business Review*.
- Shore, L. M., Tetrick, L. E., & Barksdale, K. (2001). *Social and economic exchanges as mediators of commitment and performance*. Unpublished manuscript.
- Tomal, A., & Johnson, L. (2008). Earnings Determinants for Self-Employed Women and Men in the Informal Economy: The Case of Bogota, Colombia. *International Social Science Review*, 83(1/2), 71-84. Retrieved from <http://www.jstor.org/stable/41889928>
- World Bank. (n.d.). Female Entrepreneurship Resource Point - Introduction and Module 1: Why Gender Matters. Retrieved from <http://www.worldbank.org/en/topic/gender/publication/female-entrepreneurship-resource-point-introduction-and-module-1-why-gender-matters>
- World Bank Group-IFC. (2011, October). Strengthening Access to Finance for Women-Owned SMEs in Developing Countries. Retrieved from [https://www.ifc.org/wps/wcm/connect/a4774a004a3f66539f0f9f8969adcc27/G20\\_Women\\_Report.pdf?MOD=AJPERES](https://www.ifc.org/wps/wcm/connect/a4774a004a3f66539f0f9f8969adcc27/G20_Women_Report.pdf?MOD=AJPERES)
- Zeitlin, I. M., & Homans, G. C. (1975). Social Behavior: Its Elementary Forms. *Social Forces*, 54(2), 474.  
doi:10.2307/2576649